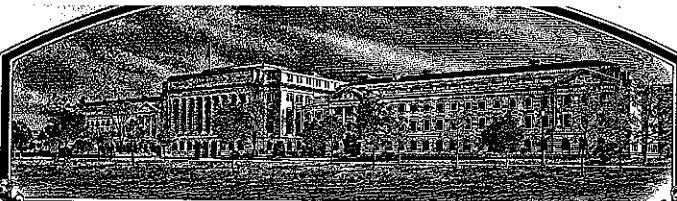


No.

200600111



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

California Cooperative Rice Research Foundation, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMERICAL GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

RICE

'Calamylow-201'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-ninth day of September, in the year two thousand and six.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

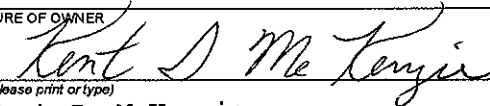


U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER California Cooperative Rice Research Foundation, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME BL-1	3. VARIETY NAME Calamylow-201
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Rice Experiment Station PO Box 306, 955 Butte City Hwy. Biggs, CA 95917		5. TELEPHONE (Include area code) (530) 868-5481	FOR OFFICIAL USE ONLY PVPO NUMBER 200600111 FILING DATE February 16, 2006
		6. FAX (Include area code) (530) 868-1730	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Non Profit Organization	8. IF INCORPORATED, GIVE STATE OF INCORPORATION CA	9. DATE OF INCORPORATION 1912	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Dr. Kent S. McKenzie Director Rice Experiment Station PO Box 306 Biggs, CA 95917			FILING AND EXAMINATION FEES: \$ 4382 - DATE 2/16/06 CERTIFICATION FEE: \$ 768 - DATE 8/29/06
11. TELEPHONE (Include area code) (530) 868-5481	12. FAX (Include area code) (530) 868-1730	13. E-MAIL ksmckenzie@cnr.org	
14. CROP KIND (Common Name) Rice	16. FAMILY NAME (Botanical) Gramineae	18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP Oryza sativa L.	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input type="checkbox"/> NO (If "no", go to item 23)	
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,662), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)	
24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)			
25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF OWNER		SIGNATURE OF OWNER 	
NAME (Please print or type) Kent S. McKenzie		NAME (Please print or type) Kent S. McKenzie	
CAPACITY OR TITLE Director	DATE December 20, 2005	CAPACITY OR TITLE Director	DATE December 20, 2005

(See reverse for instructions and information collection burden statement)

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvpindex.htm>

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 <http://www.ams.usda.gov/lsg/seed.htm>.

ITEM

- 19a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) evidence of uniformity and stability; and (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.) Foundation seed is maintained by the Rice Experiment Station (RES). Normal seed multiplication starts with head-row seed used for breeders which in turn is used to plant foundation. Headrow seed is produced as necessary. RES policy allows foundation seed to be used to produce Foundation seed when approved by CCRF.

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.) Calamyow-201 was jointly released by the California Co-op Rice Research Fdn, California Agricultural Exp. Station, and the USDA-ARS. Foundation will be distributed to California rice seed growers April 1, 2006 for the purpose of producing registered seed.

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

Tentative plans are to seek a utility patent for Calamyow-201.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

'CALAMYLOW-201' RICE**19a. Exhibit A. Origin and Breeding History of the Variety****1) Genealogy**

Calamylow-201 is a low amylose induced mutant of the semidwarf, early maturing, pubescent, premium quality short-grain cultivar Calhikari-201. It was evaluated in 2002-2004 large plot yield tests under the experimental designation BL-1. It is a pure line selection from X_2 population of Calhikari-201 irradiated with ~25kR of ^{60}Co made in 2000 at the Rice Experiment Station (RES), Biggs, CA. Calhikari-201 has the pedigree 'Koshihikari'/(91-Y-157)*2. Koshihikari is a tall, pubescent, late maturing, lodging susceptible, premium quality Japanese short-grain cultivar recognized for its high milling and cooking quality. 91-Y-157 was an RES advanced short-grain breeding line with the pedigree Koshihikari/'S-101'. S-101 is a very early maturing, semidwarf short-grain cultivar developed and released by California Cooperative Rice Research Foundation, Inc. (CCRRF) that is no longer in production.

2) Selection and multiplication

Calamylow-201 is an X_7 pure line selection advance from a single kernel of brown rice identified in an X_2 population of Calhikari-201 irradiated with ~25kR of ^{60}Co made in 2000 at the Rice Experiment Station (RES), Biggs, CA. The putative low amylose mutant was advanced in the winter greenhouse facilities at RES under the experimental designation BL-1. Seed from X_3 greenhouse plants were transplanted to the 2001 RES rice nursery for advancement and increase. Seed harvested from X_4 transplants grown in 2001 was bulked and evaluated for amylose content and cooking properties. Single panicle headrows (400) were grown in 2002 and 2003, X_4 and X_5 respectively. BL-1 was tested in the University of California Cooperative Extension (UCCE) Statewide Yield Tests 2003 and 2004. The sequential steps of development of Calamylow-201 are summarized in Figure 1. Selection was made for low amylose endosperm and the agronomic characteristic of the parent Calhikari-201.

3) Uniformity and stability

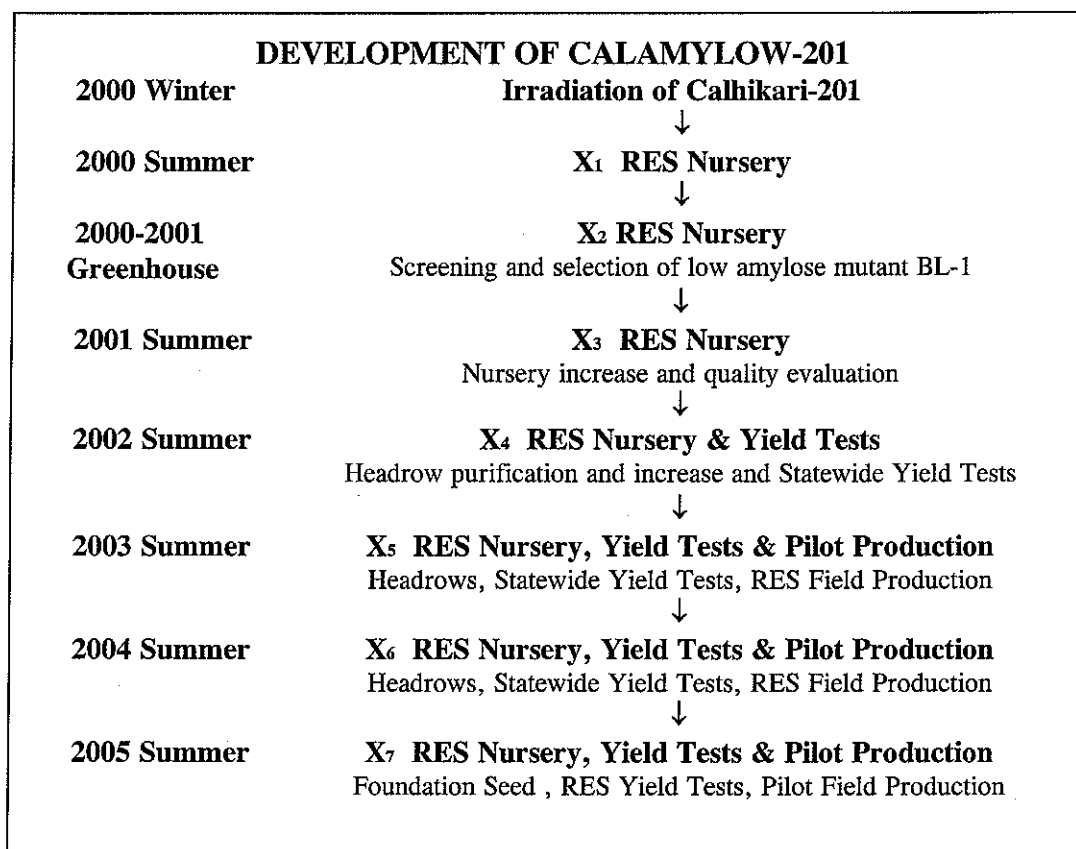
The original X_2 mutant has been observed to breed true for the low amylose mutation through the generation advance and seed increases. Panicle selections were first taken for headrow production in 2002 and continued through 2003. During the headrow production any putative segregating or variant rows were removed from the field. Visual inspection (seedling vigor, heading date, plant height, grain shape, etc.) of headrows was used as criteria to confirm cultivar purity. This is the standard procedure used at RES to monitor and maintain breeder seed of currently grown California rice cultivars. The 2002 headrow panicles were used to plant the 2003 headrows that were in turn bulked for planting of the breeder/foundation seed in 2005. The Calamylow-201 production field was inspected and approved for certification by the California Crop Improvement Association in 2005. Classes of seed will be breeder, foundation, registered, and certified seed produced in California. Foundation seed can be used to produce foundation seed if necessary and headrow and breeder seed will be produced in foundation fields as necessary to maintain cultivar purity. Calamylow-201 has been

observed to be uniform and stable in seed increase and production fields for four generations (X_4 to X_7).

4) Variants

The foundation seed field and headrows were rogued multiple times and off types, putative out crosses, and other visual variants were removed from the field. These included awned smooth (glabrous) medium grains, late medium grains and taller short grains, in a total frequency of less than 0.01 percent. The variants are visually distinct and can be identified in the field after heading.

Figure 1. Development of low amylose premium quality short-grain rice Calamy-low-201.



19b. Exhibit B. Statement of Distinctiveness**1) Variety differences**

Calamy-low-201 is being released as a special purpose low amylose rice for developing a new rice market for California. The low amylose content makes the rice more resistant to staling for chilled or frozen rice products. Currently there are no rice varieties in production with this amylose content in the US. Comparisons for field evaluation purposes were made to the parent Calhikari-201. Calamy-low-201 is distinguished by low amylose content. Its kernel size and shape is similar but smaller than Calhikari-201 and much smaller than the California short-grain S-102. Calamy-low-201 also has an opaque endosperm not found in the parent or other US rice varieties. Photograph 1 shows the endosperm appearance of Calamy-low-201 and its parent Calhikari-201. In addition, Calamy-low-201 has a lower level of seedling vigor and lower yield potential. Calamy-low-201 is most similar to Calhikari-201.

2) Statistical data

Agronomic characteristics: Agronomic data from three years of testing at RES is presented in Table 1. Agronomic data collected from the multiple location University of California Cooperative Extension (UCCE) Statewide Yield Tests in 2002 to 2004 are summarized in Table 2 including comparison to the standard medium grain M-202.

Kernel characteristics: Table 3 and Photo 1 show significant differences in kernel amylose content, kernel size and appearance of milled and brown rice kernels of Calamy-low-201 and its parent Calhikari-201.

Table 2. Agronomic performance and milling of Calamylow-201, Calhikari-201 and M-202 in UCCE Statewide Yield Test (Early Group) 2002 to 2004.

Entry	Grain Type	Harvest Moist. (%)	Yield (lb/acre at 14%)	SV†	Days to 50% heading	Height (cm)	Lodged (%)	H ₂ O‡	Head Rice (%)	Total Rice (%)
<u>2002</u>										
CA-201	LA	17.3	7150	4.2	87	94	53	19.2	59	70
CH-201	SPQ	15.9	8290	5.0	88	93	66	18.7	58	70
M-202	M	19.9	9260	4.8	89	101	62	17.3	61	70
<u>2003</u>										
CA-201	LA	19.5	6530	4.7	76	94	76	18.6	68	71
CH-201	SPQ	18.7	7500	5.0	80	94	73	19.2	67	70
M-202	M	22.0	8210	5.0	80	102	66	19.2	66	70
<u>2004</u>										
CA-201	LA	15.4	7500	4.7	85	97	66	13.9	57	72
CH-201	SPQ	15.2	8530	5.0	88	97	66	13.1	49	74
M-202	M	17.4	9670	4.9	87	104	65	17.3	64	72
<u>Average</u>										
CA-201	LA	17.4	7060	4.5	83	95	65	17.2	62	71
CH-201	SPQ	16.6	8100	5.0	84	95	68	17.0	58	71
M-202	M	19.8	9050	4.9	85	102	64	17.9	64	71

† Seedling vigor score where 1=poor, 5= excellent.

‡ H₂O = Average harvest moisture of milling row samples.

H/T = Head and total milled rice averages of two rows harvested at two harvest moistures/year.

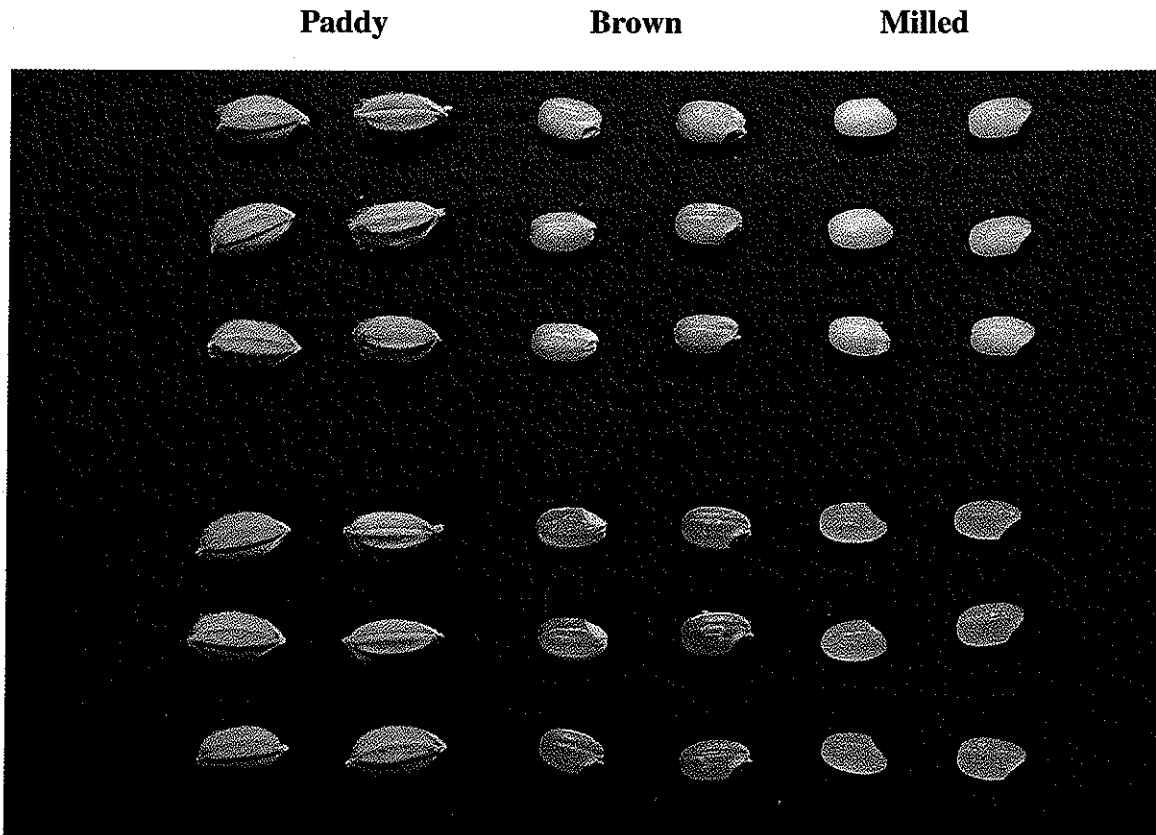
Table 3. Distinguishing kernel characteristics of Calamylow-201 and Calhikari-201 grown at RES, Biggs, CA.

Quality Trait	Calamylow-201		Calhikari-201	
	2003	2004	2003	2004
Apparent Amylose (%)	6.6	5.7	17.7	17.1
Brown Rice (mm)				
Length	4.90	4.76	5.01	5.10
Width	2.91	2.90	2.97	2.99
L/W ratio	1.7	1.6	1.7	1.7
1000 Grain Weight (g)	17.8	19.7	19.8	20.2
Endosperm	opaque	opaque	translucent	translucent
Whiteness # (Kett)	43.9	48.3	40.2	42.7

Table 3. Distinguishing kernel characteristics of Calamylow-201 and Akitakomachi grown at RES, Biggs, CA.

Quality Trait	Calamylow-201		Akitakomachi	
	2003	2004	2003	2004
Apparent Amylose (%)	6.6	5.7	16.5	15.0
Endosperm	opaque	opaque	translucent	translucent

Photograph 1. Paddy, brown and milled rice samples of Calamy-low-201 (top 3 rows) and parent Calhikari-201 (bottom 3 rows). Note smaller kernel size and opaque brown and milled rice of low amylose Calamy-low-201.



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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY

Rice (*Oryza sativa*)

NAME OF APPLICANT (S) California Cooperative Rice Research Foundation, Inc.	TEMPORARY OR EXPERIMENTAL DESIGNATION BL-1	VARIETY NAME Calamy-low-201
ADDRESS (Street and No. or RD No., City, State, and Zip Code, Country) Rice Experiment Station 955 Butte City Hwy. PO Box 306 Biggs, CA 95917		FOR OFFICIAL USE ONLY PVPO NUMBER 200600111

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the character of this variety in the spaces provided below. These numbers are also code numbers corresponding to descriptors developed by IBGR-IRRI Rice Advisory Committee and the US Rice Crop Advisory Committee. Breeders will demonstrate distinctness more readily by describing as many characters as is possible.

1. MATURITY: Days to Heading (Seedling to 50% Heading)

A. South: (Location: _____) at _____ kg/ha (Nitrogen Rate)

____ Number of Days

____ Days Earlier Than Check Variety: _____

____ Days Same As Check Variety: _____

____ Days Later Than Check Variety: _____

____ Maturity Class 1 = Very Early (85 Days or Less) 2 = Early (86 - 100)
3 = Intermediate (101 - 115) 4 = Late (More Than 115)

B. California: (Location: Biggs, CA) at 135 kg/ha (Nitrogen Rate)

83 Number of Days (fallowed land)

2 Days Earlier Than Check Variety: Calhikari-201

____ Days Same As Check Variety: _____

2 Days Later Than Check Variety: Akitakomachi

2 Maturity Class 1 = Very Early (90 Days or Less) 2 = Early (91 - 97)
3 = Intermediate (98 - 104) 4 = Late (More Than 104)

2. CULM:

3 Angle (Degrees from Perpendicular after Flowering):
1 = Erect (Less than 30°) 3 = Intermediate (About 45°) 5 = Open (About 60°)
7 = Spreading (More than 60° but the culms do not rest on the ground)
9 = Procumbent (The culm or its lower part rests on the ground surface)

2. CULM: (continued)

LENGTH
 95.0 cm (Soil level to top of extended panicle on main stem)
 2.0 cm Shorter Than Check Variety: M-202
 Length Same as Check Variety: Calhikari-201
 2.0 cm Longer than Check Variety: L-204

1 Height Class: 1 = Semidwarf 2 = Short 3 = Medium 4 = Tall
 1 Internode Color: (After Flowering): 1 = Green 2 = Light Gold 3 = Purple Lines 4 = Purple
 4 Strength (Lodging Resistance): 1 = Strong (no Lodging) 3 = Moderately Strong (Most Plants Leaning)
 5 = Intermediate (Most Plants Lodged) 7 = Weak (Most Plants Flat)
 9 = Very Weak (All Plants Flat)

3. FLAG LEAF: (After Heading)

21.3 cm Length 10.5 mm Width
 3 Pubescence: 1 = Glabrous 2 = Intermediate 3 = Pubescent
 3 Leaf Angle (After Heading): 1 = Erect 3 = Intermediate 5 = Horizontal 7 = Descending
 2 Blade Color: 1 = Pale Green 2 = Green 3 = Dark Green 4 = Purple Tips
 5 = Purple Margins 6 = Purple Blotch 7 = Purple
 1 Basal Leaf Sheath Color: 1 = Green 2 = Purple Lines 3 = Light Purple 4 = Purple

4. LIGULE:

8.0 mm Length (From base of collar to the tip, at late vegetative stage)
 1 Color: (Late Vegetative Stage): 1 = White 2 = Purple Lines 3 = Purple
 2 Shape: 1 = Acute to Acuminate 2 = 2-Cleft 3 = Truncate
 1 Collar Color (Late Vegetative Stage): 1 = Pale Green 2 = Green 3 = Purple
 1 Auricle Color (Late Vegetative Stage): 1 = Pale Green 2 = Purple

5. PANICLE:

15.8 cm Length
 5 Type: 1 = Compact 5 = Intermediate 9 = Open
 2 Secondary Branching: 1 = Absent 2 = Light 3 = Heavy 4 = Clustering
 2 Exsertion (Near Maturity): 1 = Less than 90% 2 = 90 - 99% 3 = 100% Exserted
 2 Axis: 1 = Straight 2 = Droopy
 1 Shattering: 1 = Very Low (Less Than 1%) 3 = Low (1 - 5%) 5 = Moderate (6 - 25%)
 7 = Moderately High (26 - 50%) 9 = High (More than 50%)
 1 Threshability: 1 = Difficult 2 = Intermediate 3 = Easy

6. GRAIN: (Spikelet)

1 Awns (After Full Heading): 0 = Absent 1 = Short and Partly Awned 5 = Short and Fully Awned
 2 7 = Long and Partly Awned 9 = Long and Fully Awned
 Apiculus Color (At Maturity) 1 = White 2 = Straw 3 = Brown (Tawny) 4 = Red
 1 5 = Red Apex 6 = Purple 7 = Purple Apex
 Stigma Color: 1 = White 2 = Light Green 3 = Yellow 4 = Light Purple 5 = Purple

6. GRAIN: (Spikelet)0

Lemma and Palea Color (At Maturity):

0 = Straw

3 = Brown Furrows on Straw

6 = Purple Spots on Straw

9 = Black

1 = Gold and/or Gold Furrows on Straw Background

4 = Brown (Tawny)

7 = Purple Furrows on Straw

10 = White

2 = Brown Spots on Straw (Piebald)

5 = Reddish to Light Purple

8 = Purple

4

Lemma and Palea Pubescence:

1 = Glabrous

2 = Hairs on Lemma Keel

3 = Hairs on Upper Portion

4 = Short Hairs

5 = Long Hairs (Velvety)

Spikelet Sterility (At Maturity):

1 = Highly Fertile (> 90%)

3 = Fertile (75 – 90%)

5 = Partly Sterile (50 – 74%)

7 = Highly Sterile (< 50% to Trace)

9 = Completely Sterile (0%)

7. GRAIN: (Seed)2

Seed Coat (Bran) Color:

1 = White

2 = Light Brown

3 = Speckled Brown

4 = Brown

3

5 = Red

6 = Variable Purple

7 = Purple

Endosperm Type:

1 = Nonglutinous (Nonwaxy)

2 = Glutinous (Waxy)

3 = Indeterminate

9

Endosperm Translucency:

1 = Clear

5 = Intermediate

9 = Opaque

1

Endosperm Chalkiness:

0 = None

5 = Medium (10 – 20% of Sample)

1 = Small (Less than 10% of Sample)

9 = Large (More than 20% of Sample)

0

Scent (Aroma):

0 = Nonscented

1 = Lightly Scented

2 = Scented

Shape Class (Length/Width Ratio):

1

Paddy

1 = Short (2.2:1 and Less)

2 = Medium (2.3:1 to 3.3:1)

3 = Long (3.4:1 and More)

1

Brown

1 = Short (2.0:1 and Less)

2 = Medium (2.1:1 to 3.0:1)

3 = Long (3.1:1 and More)

1

Milled

1 = Short (1.9:1 and Less)

2 = Medium (2.0:1 to 2.9:1)

3 = Long (3.0:1 and More)

Measurements:

Grain Form

Length

Width

Thickness

L/W

1000 Grains

(mm)

(mm)

(mm)

Ratio

(grams)

Paddy

6.873.44—2.023.8

Brown

4.832.91—1.719.0

Milled

4.52.80—1.617.6

Milling Quality (% Hulls)

62.71 Milling Yield (% White Kernel (head) Rice to Rough Rice)6.0 % Protein6 % AmyloseAlkali Spreading Value: 6.0 1.5% KOH Solution6.6 1.7% KOH Solution7

Gelatination Temperature Type:

1 = High

5 = Intermediate

7 = Low

Amylographic Paste Viscosity (Brabender Units)

Peak
310Hot Paste
110Cooled Paste
158"Breakdown" "Setback"
200/-156**8. RESISTANCE TO LOW TEMPERATURE:**3

Germination and Seedling Vigor:

1 = Low

2 = Medium

3 = High

1

Flowering (Spikelet Fertility):

1 = Low

2 = Medium

3 = High

9. SEEDLING VIGOR NOT RELATED TO LOW TEMPERATURE:3

Vigor:

1 = Low

2 = Medium

3 = High

10. BLAST RESISTANCE: (*Pyricularia oryzae*). (International races found under References)

0 = Immune		1 = Resistant		3 = Moderately Resistant		5 = Intermediate		7 = Moderately Susceptible		9 = Susceptible	
Group		IB		IC		ID		IE		IG	IH
Number	1	5	45	49	54	1	17	1	13	1	1
Resistance	—	—	—	—	—	—	—	—	—	9	—

11. RESISTANCE TO OTHER DISEASES:

0 = Immune 1 = Resistant 3 = Moderately Resistant 5 = Intermediate 7 = Moderately Susceptible 9 = Susceptible

- | | |
|---|---|
| ___ Narrow Brown Leaf Spot (<i>Cerospora oryzae</i>) | ___ <u>8</u> Aggregate Sheath Spot (<i>Rhizoctonia oryzae-sativae</i>) |
| ___ Leaf Smut (<i>Entyloma oryzae</i>) | ___ Straight Head |
| ___ Brown Leaf Spot (<i>Helminthosporium oryzae</i>)
(= <i>Bipolaris oryzae</i>)
(= <i>Drechslera oryzae</i>) | ___ Kernel Smut (<i>Neovossia horrida</i>)
(= <i>Tilletia barclayana</i>) |
| ___ Leaf Scald (<i>Gerlachia oryzae</i>) | ___ White Tip Nematode (<i>Aphelenchoides besseyi</i>) |
| ___ Hoja Blanca Virus | ___ <u>8</u> Stem Rot (<i>Sclerotium oryzae</i>) |
| ___ Sheath Rot (<i>Sarocladium oryzae</i>) | ___ Bacterial Blight (<i>Xanthomonas campestris pv. oryzae</i>) |
| ___ Pythium Seedling Blight (<i>Pythium</i> sp.) | ___ Sheath Blight (<i>Rhizoctonia solani</i>) |
| ___ Sheath Spot (<i>Rhizoctonia oryzae</i>) | |
| ___ Other: _____ | |

12. INSECT RESISTANCE:

0 = Immune 1 = Resistant 3 = Moderately Resistant 5 = Intermediate 7 = Moderately Susceptible 9 = Susceptible

- | | |
|---------------------|---|
| ___ Grasshopper | ___ Rice Stink Bug (<i>Oegalus pugnax</i>) |
| ___ Rice Leafhopper | ___ Swarm Caterpillar |
| ___ Rice Hispa | ___ <u>9</u> Rice Water Weevil (<i>Lissorhoptrus oryzophilus</i>) |
| ___ Rice Midge | ___ Rice Stalk Borer (<i>Chilo plejadellus</i>) |
| ___ Least Skipper | ___ Sugarcane Borer (<i>Diatraea saccharalis</i>) |

13. OTHER DESCRIPTORS: If there are other characters that describe this variety, please indicate below:**REFERENCES**

- C. R. Adair *et al.* 1972. Rice in the United States: Varieties and Production. USDA Handbook No. 289 (Rev.), 124 pp.
- J. G. Atkins *et al.* 1967. An International Set of Rice Varieties for Differentiating Race of *Pyricularia Oryzae*. Phytopath. 57:297-301.
- IBPGR-IRRI Rice Advisory Committee. 1980. Descriptors for Rice *Oryza Sativa* L. International Rice Research Institute. 21 pp.
- K. C. Ling and S. H. Ou, 1969. Standardization of the International Race Numbers of *Pyricularia Oryzae*. Phytopath. 59:339-342.
- B. D. Webb *et al.* 1985. Utilization Characteristics and Qualities of United States Rice. In Proceedings on Rice Grain Quality and Marketing. International Rice Research Institute (IRRI), Los Branos, Philippines. P. 25-35.

Table 1. Agronomic characteristics and performance summary of low amylose Calamylow-201 and the premium quality short-grain Calhikari-201, from 2002 to 2004 large plot tests at RES, Biggs, CA.

Characteristic	Year	Calamylow-201	Calhikari-201	LSD (0.05)
Seedling vigor (score)†	2002	4.8	5.0	0.6
	2003	5.0	5.0	0.2
	2004	4.9	5.0	0.1
Days to 50% heading (d)	2002	86	84	4
	2003	74	77	2
	2004	83	85	3
Plant height (cm)	2002	96	94	4
	2003	91	90	4
	2004	97	99	2
Lodging (%)	2002	38	64	24
	2003	71	79	46
	2004	64	69	26
Grain yield (14% moisture lb/acre)	2002	7760	8910	1350
	2003	7250	8310	1020
	2004	7030	8120	1130

† Seedling vigor visual score where 1 = poor and 5 = excellent.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) California Cooperative Rice Research Foundation, Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER BL-1	3. VARIETY NAME Calamylow-201
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Rice Experiment Station 955 Butte City Hwy. PO Box 306 Biggs, CA 95917	5. TELEPHONE (Include area code) (530) 868-5481	6. FAX (Include area code) (530) 868-1730
7. PVPO NUMBER 200600111		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
- ✓ 2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).


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**U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

**EXHIBIT F
DECLARATION REGARDING DEPOSIT**

NAME OF OWNER (S) California Cooperative Rice Research Foundation.	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 955 Butte City Hwy, PO Box 306 Biggs, CA 95917 USA	TEMPORARY OR EXPERIMENTAL DESIGNATION BL-1 VARIETY NAME Calamylow-201
NAME OF OWNER REPRESENTATIVE (S) Kent S. McKenzie	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 955 Butte City Hwy, PO Box 306 Biggs, CA 95917 USA	FOR OFFICIAL USE ONLY PVPO NUMBER <div style="font-size: 2em; font-weight: bold;">200600111</div>

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.


 Signature

2-10-06
 Date